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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,857	02/11/2002	Dominique Loubinoux	4068-040	8967
22850	7590	06/02/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			AFTERGUT, JEFF H	
			ART UNIT	PAPER NUMBER
			1733	
DATE MAILED: 06/02/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/068,857

Applicant(s)

LOUBINOUX, DOMINIQUE

Examiner

Jeff H. Aftergut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 30,31,44,46,47 and 52-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 30,31,44,46,47 and 52-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 30, 31, 46, 47, AND 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whisler et al '262 in view of Woodside et al '643, Vane and Repass et al.

Whisler '262 suggested that it was known to provide a lap of fibers which were commingled fibers and which were provided such that the fibers were disposed and/or fed along the former in a parallel direction to the feed direction of the machine. More specifically, Whistler '262 suggested that the layer 142 was provided and fed along the machine direction. The film 142 was a plastic film which was melted in the processing to adhere the fibers together. As an alternative to using this film 142 which was fed in the machine direction, the reference to Whistler '262 suggested that those skilled in the art at the time the invention was made would have understood that commingled fibers of glass and plastic material would have been a suitable alternative, see column 8, lines 52-column 9, line 10. Whisler '262 suggested that one provided a second bundle of the fibers of commingled material in the form of wrapped strands 20 which can be wrapped at angles of 87 degrees (i.e. substantially transverse the angle of the machine direction 330 of the strands of commingle used for layer 142) and disposed the same upon the first layer of commingled fibers such that the arrangement of fibers was substantially transverse to the first direction to provide a combination of threads. The combination of strands was then heated under pressure with heating and combining arrangement 80.

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The sheet was then collected. The reference suggested that commingled fibers would have been those produced according to the techniques of U.S. patent application serial number 08/311,817, see column 7, lines 39-46, where the reinforcing fibers were disclosed as glass and the polymeric fibers were stated to be thermoplastics (like polypropylene or polyethylene). U.S. patent application 08/311,817 matured into US Patent 5,626,643 to Woodside et al and expressly suggested that the commingled fibers from 30-70 percent thermoplastic (second fiber) content, see column 6, lines 18-25, column 4, lines 45-50, noting that the first fibers were described as glass fibers. Clearly, Whisler et al '262 contemplated use of commingle fibers which had at least 10% thermoplastic fiber material therein. In any event, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ commingled fiber strands for both the fibers wrapped about the form as well as the fibers fed parallel to the machine direction along the form wherein the fibers included commingled fibers having at least 10% thermoplastic organic fiber therein in the process of Whisler et al '262 as the reference suggested such machine direction reinforcement would have been useful and those skilled in the art would have known that commingled fibers typically included at least 10% thermoplastic to the reinforcement therein. Woodside '643 expressly suggested in the process of making a commingled yarn that one skilled in the art would have incorporated 30-70% thermoplastic fiber with the reinforcing fiber in the commingled yarns described therein, see column 6, lines 18-26. Clearly, the reference to Whisler et al suggested that one skilled in the art at the time the invention was made would have been directed to utilize the commingled filament yarns of

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Woodside '643 as described at column 7, lines 39-46. The reference to Whisler suggested that one would have provided a central layer of unidirectional fibers which was fed in the machine direction followed by layers of fibers which were transverse to the machine direction and laid on either side of the machine direction fibers followed by additional exterior machine direction unidirectional fibers. The reference did not teach only three layers wherein one provided a machine direction layer initially, a layer of cross machine direction fibers disposed upon the machine direction fibers followed by an additional layer of machine direction fibers which made the finished assembly (i.e. Whisler et al taught the use of four layers rather than 3 layers).

While the references as set forth above in suggested the overall operation, to further evidence that those skilled in the art of composite manufacture would have known to incorporate thermoplastic fibers within the reinforcement to make the composite sheeting, the reference to Vane is cited. Additionally, the reference to Vane suggested that those skilled in the art of manufacturing a fiber reinforced thermoplastic composite would have known how to form the same wherein the number of layers would have been determined in order to render the finished assembly isotropic (and with the desired strength requirements necessary for the finished assembly) and such included the use of a three layer structure as described at column 2, line 57-column 3, line 2, see also column 3, lines 54-58. Vane clearly envisioned the formation of a three layer structure wherein the first layer was applied in the machine direction, the second in the cross machine direction and the last again applied in the machine direction. Note that the reference was used to make fiber reinforced thermoplastic articles wherein

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glass fibers and thermoplastic fibers (the matrix) were employed. The reference to Vane does not expressly teach how one skilled in the art would have laid up the fibers to make only a three layer assembly. However, such fiber processing was well known at the time the invention was made as evidenced by Repass et al.

Repass et al suggested that it was known to form a cross laid assembly of fibers in order to render the same useful for a composite article which included impregnation of the fiber body and formation of the same by setting of the resin therein, see column 1, lines 8-15, column 1, lines 33-41. The reference formed the fiber body by laying down a layer of continuous fibers in the machine direction, cross laying a layer of fibers at 90 degrees to the machine direction and application of a third layer of fibers which was again applied in the machine direction onto the cross machine direction fibers. Repass et al made it clear that those skilled in the art of making a reinforced material for a composite article would have known how to assemble three layers wherein one cross machine direction layer was disposed between two machine direction layers in the manufacture of the same. As the reference to Vane expressly suggested the desirability of forming such a layer assembly in the manufacture of a reinforced composite from reinforcing fibers and thermoplastic fibers (which form the matrix for the reinforcing fibers in the finished assembly), it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of Repass et al to form a composite having three layers of commingled fibers as suggested by Vane when making the composite sheets as proposed by Whisler et al '262 with the commingled fibers of Woodside'643.

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With regard to claim 31, note that the reference to Vane for instance suggested the application of additional material onto the fiber layers in order to improve the mechanical properties of the finished assembly (impart strength to the same in a specific area). Regarding claim 46, note that Whisler and Vane both suggested that those skilled in the art would have employed continuous fibers. Regarding claim 47, note that the fibers suggested in the operation included the use of polypropylene and polyethylene fibers therein (organic). Regarding claim 52, note that the references to Vane and Whisler suggested the use of perpendicularly oriented filaments. Note additionally that Whisler and Woodside clearly suggested that those skilled in the art would have employed glass and polypropylene fibers therein. Regarding claim 53, note that Vane suggested only forming the assembly from three layers and the reference to Repass expressly suggested that those skilled in the art would have known how to form the same. Regarding claim 54, note that the references as set forth above suggested that one skilled in the art would have employed continuous fibers in the operation.

3. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 2 further taken with O'Connor.

The reference to Whisler clearly suggested that one skilled in the art of forming the composite article would have applied heat and pressure to the same in order to form a "solid" sheet of material wherein the finished assembly could be taken up and the fibers were laid such that there was no openings therein. The reference did not expressly state that one skilled in the art would have known to apply the heat and then follow the same with the pressure application (the heat and pressure in Whisler appear

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to be applied simultaneously to make the solid sheet). The applicant is advised, however, that in the art of making a composite article from reinforcing fibers and thermoplastic fibers it was known at the time the invention was made to form the same by application of heat followed by the application of pressure as suggested by O'Connor. Applicant is more specifically referred to column 4, lines 19-26 for example where the reference makes it clear that the critical component for the consolidation of the assemblies having reinforcing fiber and thermoplastic fiber therein was the application of sufficient heat to melt the thermoplastic and that pressure could be applied to provide greater contact if desired (clearly, the heating would take place followed by the application of pressure in order to ensure the desired contacting with the matrix material). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply pressure subsequent to the heating of the composite material in order to ensure greater contact between the reinforcing fibers and the thermoplastic matrix fibers in the assembly as suggested by O'Connor in the operation of making a fiber reinforced thermoplastic composite as suggested above in paragraph 2.

### ***Response to Arguments***

4. Applicant's arguments filed May 3, 2005 have been fully considered but they are not persuasive.

The applicant essentially argues that the prior art of record failed to teach how one skilled in the art would have formed the specified three layer assembly and additionally that there is no motivation to only form a three layer assembly in light of the



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structures taught by Whisler. The applicant is advised that the reference to Vane (of record) taught that it was known to form a three layer assembly of the type recited now in the claims. Additionally, while the reference to Vane did not expressly recite the necessary apparatus used to form the three layer assembly, the reference to Repass (newly cited), clearly shows that those skilled in the art at the time the invention was made would have known how to form the specified assembly.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on 571-272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jeff H. Aftergut

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Primary Examiner  
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JHA  
May 31, 2005